DOCUMENT RESUME

ED 392 420 IR 017 711

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TITLE Distance Education for Doctoral Students: An Overview of the National Cluster Format for Students in the Doctoral Program for Child and Youth Studies.
PUB DATE 95
NOTE 8p.; In: "Emerging Technologies, Lifelong Learning, NECC '95"; see IR 017 705.
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150) -- Tests/Evaluation Instruments (160)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Access to Education; Computer Literacy; *Distance Education; Doctoral Programs; Electronic Classrooms; Electronic Mail; *Graduate Students; Higher Education; Internet; *Student Surveys; Telecommunications; Training
IDENTIFIERS *Computer Use; Nova Southeastern University FL; UNIX Operating System

ABSTRACT

This paper offers an overview of the telecommunications and delivery techniques involved in providing distance education to graduate students in doctoral programs. Good distance education should ensure variety of format and successful communication; it can come via audiobridge, videotapes, audiotapes, the telephone, electronic mail, electronic library access, electronic bulletin boards, and electronic classrooms. In the case of Nova Southeastern University (Florida), distance education graduate students in the so-called "National Cluster" are given several days of telecommunications training with particular focus on UNIX commands relevant to electronic mail and the Internet. A study of National Cluster students was begun there to identify degree of growth in their computer expertise, degree of computer use in pursuing their studies, and degree of effect technology use has had on career status and professional or personal interactions. A copy of the survey is appended. (Author/BEW)

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Distance Education for Doctoral Students: An Overview of the National Cluster Format for Students in the Doctoral Program for Child and Youth Studies

by Lois Ann Hesser

Paper presented at the NECC '95, the Annual National Educational Computing Conference (16th, Baltimore, MD, June 17-19, 1995.

IR017711

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Key words: distance education, telecommunication, ECR, adult learning

Abstract

The use of telecommunications to provide graduate education at the doctoral level is discussed. An overview of delivery techniques is provided, as well as a description of the training provided for students who elect to participate in this format. A study is underway to identify degree of change in computer expertise, degree of computer use in pursuing their studies, and what effect, if any, the use of technology has had on the students' career status as well as their professional/personal interaction with others. A copy of the survey instrument is attached.

Introduction

While many still consider the term *distance education* to be an avant garde and possibly somewhat suspect form of educational delivery, this is a delivery concept that has been used with increasing success for over 300 years. Accounts of early correspondence courses, the earliest form of education at a distance from the teacher, can be found in the March 20, 1728, *Boston Gazette* (Battenburg, 1971) and in the delivery of Isaac Pitman's shorthand courses in 1840 England (Dinsdale, 1953). Rumble (1986) identifies organizations such as Chautauqua, the International Correspondence Schools, and later offerings by traditional schools such as Illinois Wesleyan and the University of Wisconsin as instrumental in helping distance education for the adult learner to become a significant factor of the educational scene in the United States.

The addition of technological media in recent years has fired the debate concerning the appropriateness of distance education. Can the student receive maximum benefit and adequate learning from instruction in which interaction with the instructor is partially or wholly mediated by a technological device? Moore (1968) would decidedly say yes. His discourse on tutoring provides as its major insight the discovery that traditional school methods are unavoidable inadequate because they are applied to many people at once, ignoring any individual differences in background, culture, or learning styles. Indeed, Carroll (1963) contended that homogeneous grouping was actually an impossibility due to individual learning rates and capacities.

Like it or not, the computer has precipitated the entrance of an age of learning that is fundamentally independent. The value of individualization is realized when a student can engage in learning at any time or in any place that may fit the individual's own unique needs, whether at home, at work, or in a center for learning.

Almost half of Nova Southeastern University's 16,000 students are enrolled in field-based programs. These programs are delivered in a variety of ways. They range from regional cluster locations where students meet once-a-month for all-day Saturday classes with a professor flown to the site by the University, to the student working at home using a personal computer and modem to communicate electronically over a regular phone line. The Ed.D. Program in Child and Youth Studies (CYS) has been a pioneer in exploring ways of delivering education in non-traditional ways to non-resident students. This program, and its predecessor, the Doctoral Program in Early and Middle Childhood, has used the regional site format for the past 12 years, and the computer-assisted format for the past 4 years.

The computer-assisted cluster format utilized by CYS, referred to as the "National Cluster" approach, uses a combination of the standard cluster format balanced with electronically delivered interaction. National Cluster students meet twice-a-year for a 3 to 5 day period to interact with the professor responsible for a specific study area. During the following 3 to 4 months, students and faculty interact through a variety of technological resources and online tools supported by telecommunications.

Technologies Used by National Cluster Students

Providing graduate education for a student who resides at a distance from the source of that instruction is more than simply getting information from the institution to the student. Effective education must provide the student with a variety of formats for stimulating activity, a variety of materials with which to interact and a variety of feedback resources between the instructor and the student. Variety is a major key to enriching the distance delivery system, and meeting the different learning styles of individual students.

Successful communication is perhaps the most important overall factor to be addressed if distance education is to be successful. There must be an effective substitute to the faculty/individual interface available when the student actually attends classes on the campus of the institution with an opportunity to meet with the instructor on a daily to weekly basis. Providing that variety of instructional methods and materials, developing unique and effective communication systems, and continually evaluating the process are critical to the continued delivery and effectiveness of the field-based programs in graduate education offered by Nova Southeastern University (NSU).

Various forms of technology are used to bring instruction and learning opportunities to the students. These include the use of such familiar tools as audiobridge, videotapes, audiotapes, the telephone, and electronic mail (e-mail). In addition, NSU utilizes three facilities specific to its university-wide mainframe that include electronic library access, a bulletin board, and the Electronic Classroom. While most of these technologies may be familiar to the reader, the Electronic Classroom bears some explanation.

Perhaps the most unique feature of Nova's online delivery system is the ability to simulate an actual class setting while the students participate from their homes located almost anywhere in the world. In 1985, Nova staff created the "Electronic Classroom." Utilizing the Unix operating system, it provides an electronic forum in which the teacher and students interact simultaneously. Two-thirds of the screen is allotted to the teacher to display previously prepared material, or to enter questions and comments in real time. One-third of the screen displays the names of students who have logged into the class. The use of that portion of the screen is given to a student when "called on" by the teacher. Thirty or more students can interact simultaneously with their faculty and classmates using the computer screen as their "virtual classroom."

Additional delivery techniques are being examined for feasibility with the National clusters, some of which may have possible impact on the regional clusters, as well. One of the most important new techniques is compressed video. A Nova Southeastern University Masters in Education program has recently been most successful in providing a class on early childhood education where-in students in Davie, Florida, Las Vegas, Nevada and Phoenix, Arizona, simultaneously. The interactive telecourse equipment includes television screens, remote-controlled cameras, and audio reception that is sound-activated. An inset screen allows students at one location to see themselves as well as another location on camera simultaneously. The screen display can move between sites automatically as students begin to speak, and facilities exist to show graphic material such as charts, maps or photos without interrupting the on-screen picture.

Another interactive technology that is being explored allows two persons to view the same document simultaneously on each or their computer monitors, each with the ability to enter or delete material, with the added advantage of audio contact. This "audiographics" approach over regular telephone lines is being offered by several companies. Future possibilities include expansion of such software to provide multipoint access, allowing three or four persons to share the same electronic environment.

Student Training

No student interested in joining a National Cluster format has been expected to meet any computer skill prerequisites to date. While it is obviously to their advantage to come with some computer skills, no one has ever been denied entrance on that basis. Instead, the very first student on-campus instructional period includes one and a half days in an intensive training program designed to provide students with the understanding and practice necessary to perform successfully online when they return home.

This first session consists of an overview of telecommunications in general, accessing their personal accounts, introduction and practice in using some of the basic Unix commands, practice in using the online electronic mail facility "Pine," and its accompanying editor "Pico," using the University's bulletin board program, and participating in the "Electronic Classroom" (ECR) environment. During the week following the instructional period, each student is expected to get online from his or her home computer and participate in an ECR session. The session provides review and reinforcement of the skills learned in the on-campus telecommunications sessions, as well as assuring that each student's modem setup is correct and that they can connect with the university through the Tymnet, Internet or commercial system that they have selected.

Two additional days of telecommunications training are provided for National Cluster students; one day during their next return to campus, the second day of training during their second year in the program. Training during these sessions takes them into advanced Unix commands, and review/reinforcement of the Pine and Pico programs, the instructor mode in an ECR session, using the online text assessment package called Writer's Workbench, conducting online research using the University's Electronic Library facility, and an opportunity to explore the Internet.

The Study

The first National cluster of CYS doctoral students began in February of 1991. The second and third clusters began in February and October of 1992, the fourth and fifth clusters in February and October of 1993, and the sixth National cluster in October of 1994. At this point the first and second National clusters have completed their three-year program of study. This has prompted us to begin asking several questions about the delivery methods presently being used with National Cluster students. A survey has been developed through which we will assess the influence that technology, especially telecommunications, has had on their ability to complete their course of study, their career and/or work status, and their personal interaction with friends and colleagues. In addition to the survey, personal and phone interviews will also be conducted.

The first area of interest to the researchers is to determine the students' level of computer experience at the beginning of the program, and what change, if any, has taken place by the completion of the program. Questions will be posed asking the

students to assess their individual expertise with application programs, programming and programming languages, familiarity with telecommunications, and their personal access to computer equipment at the entry and at the end of their three-year program of study. Comparisons will be made between groups and between members within each group.

A second area of interest is the degree to which the computer was used in pursuing their course of study. Questions will seek information on how often and to what degree students used the Unix system programs, e-mail, the online bulletin board, the Electronic Classroom, and the online research capabilities.

The third area to be investigated in the survey is the degree to which their involvement with technology has had an effect (if any) on their career status. Concurrently, the survey will ask what level (if any) of transfer of technology information to the individual's work place was contingent upon their use of technology in their doctoral program.

The final area of concern will be the effect (if any) of the use of technology on professional/personal interaction with others. Questions will cover the students use of the system, as a way of keeping in contact with friends and colleagues, as well as uses in pursuing career networking contacts. A copy of the survey to be completed by students, as well as a copy of the questions to be asked in personal interviews, are included in the appendix.

Discussion

The computer-based, distance education component of the Ed.D Program in Child and Youth Studies is still in its infancy. Relatively small numbers of students and faculty have participated in the program to date. However, the impact made on these students appears to have already been significant. Indeed, the approach being used has become the starting point for other programs as they begin to move into the use of high tech delivery techniques. Bugs still need to be worked out of the delivery and training system. The research upon which we have embarked should begin to provide important information to help us make revisions that are indicated in the future.

Certain advantages to the electronic approach have already been noted. In one instance, a student on the west coast sent work by e-mail to his adviser on the east coast and received the adviser's review within 24 hours. The student then made the necessary corrections and two days later sent the revised work back to the adviser. The adviser was attending a conference, but had brought along a laptop computer with a modem. The student received approval the following day. Normal time for this process using regular mail would have taken at least an additional 10 to 12 days.

National Cluster members appear to communicate with faculty and each other more frequently than students in the traditional site-based clusters. Certainly, ease of communication is one element in the success of this approach. We must also consider that, because the program is new, and students recognize that they are receiving different and specialized treatment, we may be experiencing elements of the "Hawthorne" effect that will disappear with time.

Nova Southeastern University recognizes the urgent need to provide better access to education for adult learners, especially as the gap between the necessary job skills and the education of the adult population increases. The increased mobility of our society adds another dimension to that problem. The National Cluster format of the Child and Youth Studies doctoral program is but one example of the various distance education graduate degree programs available through NSU. It is hoped that our research will provide information that will allow us to offer that education in ways that continue to be appropriate and successful.

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Appendix

Telecommunications Survey

Personal Interview Questions

NATIONAL CLUSTER TELECOMMUNICATIONS SURVEY

Please darken the box before the statement that is closest to your response to that item.

Part I. Computer Experience Background:

1. What were your technical/computer abilities prior to entering the CYS National Cluster?

- ☐ Had never used a computer
- ☐ Had used the computer for simple, limited applications.
- ☐ Had used the computer for word processing and other computer application programs
- ☐ Had a fairly solid background in computer applications and computer programming.

- ☐ Was quite proficient in the use of the computer for various tasks including the use of one or two programming languages.

2. What was your familiarity with telecommunications prior to entering the CYS National Cluster?

- ☐ Had never used telecommunications
- ☐ Had used telecommunications to access a commercial system (e.g., Prodigy)
- ☐ Had limited experience with telecommunications, mostly e-mail
- ☐ Was familiar with telecommunications, including e-mail and the UNIX operating system.
- ☐ Was very familiar with UNIX, e-mail, and other online programs.

3. What was your home computer capability prior to entering the National Cluster?

- ☐ Did not own a PC
- ☐ Did not own a PC but planned to use one in my work area.
- ☐ Was in the process of obtaining a PC and modem.
- ☐ Owned and used a PC with some frequency, but had not as yet obtained or used a modem.
- ☐ Owned and used a PC and modem for some time prior to entering the CYS program.

4. What are your home computer capabilities on completing your CYS program?

- ☐ Have never purchased a personal PC
- ☐ Am still using the same computer and modem with which I began the program.
- ☐ Have updated my original computer with additional hardware and software.
- ☐ Have invested in a new computer and modem since starting the program.
- ☐ Anticipate replacing my present system with the newest MS-DOS or MAC system within the near future.

Part II. Use of the Computer in your Educational Program:

1. Which online applications did you use during your course of study?

- ☐ The Electronic Classroom
- ☐ The Electronic Classroom and E-mail
- ☐ The Electronic Classroom, E-mail and the online library resources
- ☐ The Electronic Classroom, E-mail, online library resources and UNIX programs such as "Writers Workbench" and "talk."
- ☐ The Electronic Classroom, E-mail, online library resources, UNIX programs such as "Writers Workbench," "talk," "Notesfile," and the Internet.

2. How would you rate your ability to participate in the Electronic Classroom:

- ☐ Followed the online lesson, but was uncomfortable in actively participating.
- ☐ Followed the online lesson, and participated with questions/answers/comments on occasion.
- ☐ Followed the online lesson, and asked/answered several times during ECR sessions.
- ☐ Actively participated in the ECRs and reviewed ECRs from the online library.
- ☐ Was an active participant in ECR sessions and able to act as teacher in the ECR environment.

3. How would you rate your use of e-mail?

- ☐ Rarely used e-mail, preferred to use the telephone.
- ☐ Used e-mail only to contact study area or practicum faculty, or cluster coordinator.
- ☐ Used e-mail primarily for contact with study area or practicum faculty and the cluster coordinator, and on occasion to communicate with cluster members.
- ☐ Used e-mail almost evenly divided between faculty/coordinator business needs and personal contact with cluster members.
- ☐ Used e-mail for a variety of contact needs, not only with study area/practicum faculty, the cluster coordinator and cluster members, but also with other online users at Nova and other online institutions (e.g., Prodigy, Online America, Internet, other Universities).

4. How would you rate your use of the UNIX system?

- ☐ Rarely if ever used any UNIX system commands.
- ☐ Rarely used UNIX commands, but able to use the "mmunix" menu.
- ☐ Was comfortable in using the basic system commands such as "ls," "who," "clear" and "passwd," as well as the mmunix menu.
- ☐ Was comfortable using UNIX commands, the mmunix menu, and "talk."
- ☐ Was comfortable using UNIX commands, the mmunix menu, "talk," and an online text editor (e.g., ex-editor or PICO).

5. How would you rate your use of online research capabilities?

- ☐ Rarely if ever used electronic research resources; preferred to use the local library
- ☐ Used Nova's electronic research resources two or three times but spent more time using local library resources.
- ☐ Used electronic research resources and local library facilities about equally.
- ☐ Used Nova's electronic research resources for the major part of my research needs.
- ☐ Used Nova's electronic research resources as well as commercial online resources to provide for my research needs.

6. What is your estimate of the average amount of time spent online during your program?

- ☐ Between 1 to 2 hours per month.
- ☐ Between 3 to 5 hours per month.
- ☐ Between 6 to 8 hours per month.
- ☐ Between 9 to 12 hours a month.
- ☐ 13 or more hours per month.

Part III. Continuing Use of Technology:

1. What is the technology use situation at your work area?

- ☐ There is no use of technology in my work area
- ☐ There is very limited use of technology in my work area, and only on an individual basis.
- ☐ There is moderate use of technology for administrative needs
- ☐ There is moderate use of technology for both administrative and client needs
- ☐ There is broad and innovative use of technology for both administrative and client needs.

2. What is your personal use of technology at this point?

- ☐ Seldom if ever use technology for personal or work area activities.
- ☐ Use technology for personal applications only on a limited basis.
- ☐ Use technology for both personal and work-oriented activities on a limited basis.
- ☐ Use technology for both personal and work-oriented activities on a frequent basis.
- ☐ The use technology has a major role for both personal and work-oriented activities.

3. Have you taken a role in promoting the use of technology in your work area?

- ☐ I have taken no role in promoting the use of technology.
- ☐ I have had a small role in promoting the use of technology.
- ☐ I have had a moderate role in promoting the use of technology
- ☐ I have had an active role in promoting the use of technology.
- ☐ I have had a major leadership role in promoting the use of technology.

4. How would you rate your technical/computer capabilities on completing your CYS program?

- ☐ Have not developed much expertise with the computer
- ☐ Use the computer on a limited basis for personal and/or professional activities.
- ☐ Have become fairly proficient with the computer, especially with word processing
- ☐ Have developed considerable expertise with the computer and various kinds of software.
- ☐ Use the computer almost daily for a wide variety of applications and programs.

5. How would you rate your telecommunications activities on completing your CYS program?

- ☐ Rarely if ever use telecommunications
- ☐ Use my Nova account or a commercial online program occasionally (once every two or three months)
- ☐ Use my Nova account or a commercial online program one or two times a month
- ☐ Use my Nova account or a commercial online program on a weekly basis
- ☐ Use my Nova account or a commercial online program several times each week.

6. Has telecommunications played a role in maintaining or promoting your relationship with other NOVA colleagues?

- ☐ Telecommunications has had no effect on my relationships with colleagues.
- ☐ Telecommunications had been somewhat instrumental in developing personal relationships with one or two colleagues.
- ☐ Telecommunications has helped me develop fairly close personal relationships with a majority of the members of my cluster.
- ☐ Telecommunications has been instrumental in developing strong personal relationships with members of my cluster and other colleagues in the CYS program.
- ☐ Telecommunications has been instrumental in developing personal relationships with Nova and non-Nova colleagues.

7. Has telecommunications played a role in your ability to network professionally with other colleagues?

- ☐ Telecommunications has had no effect on my professional network.
- ☐ Telecommunications had played a role in developing a professional network with one or two colleagues at NOVA.
- ☐ Telecommunications has helped me develop a professional network with a group of 5 to 10 NOVA colleagues.
- ☐ Telecommunications has been instrumental in developing a broad professional network of NOVA colleagues.
- ☐ Telecommunications has been instrumental in developing a professional network with both Nova and non-Nova colleagues.

8. Based upon your experiences, how would you recommend the National cluster to a colleague?

- ☐ Would never recommend.
- ☐ Would recommend only if no other option was available.
- ☐ Would recommend only for those with an established computer background.
- ☐ Would probably recommend, regardless of previous computer background.
- ☐ Would highly recommend regardless of previous computer background.

9a. Please relate at least one anecdote relating to an incident during your time in the program where you were able to support a colleague, form a personal relationship, or other event that might indicate that telecommunication is not a cold and impersonal medium:

9b. If you experienced a negative relationship or in any way found telecommunications to be cold and impersonal, please describe that event below:

10. Has the use of technology had any influence, direct or indirect in making a change in your salary, job status, or career direction? If so would you please describe.